

The Mining Journal

Established 1835

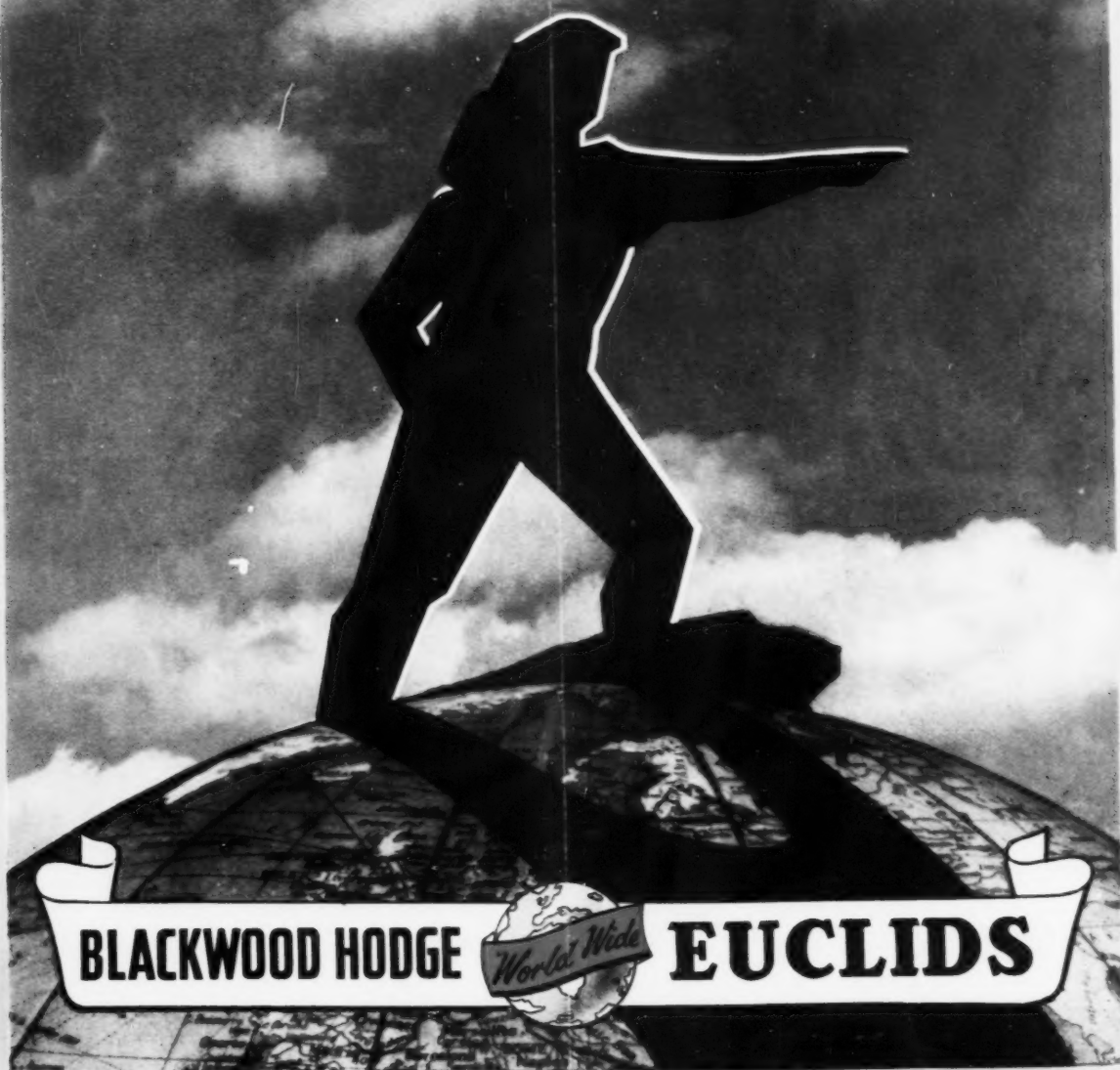
Railway & Commercial Gazette

Vol. CCXLVI No. 6283

LONDON, JANUARY 20, 1956

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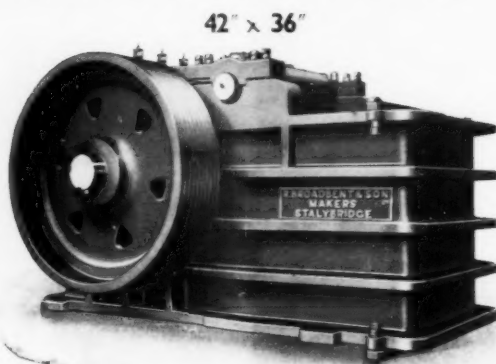
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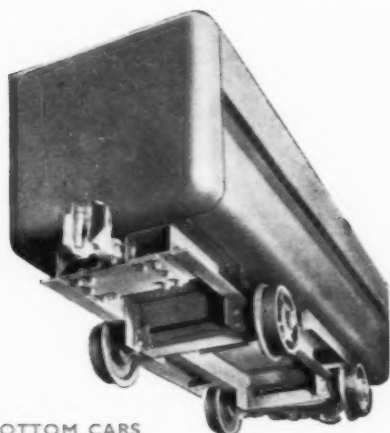
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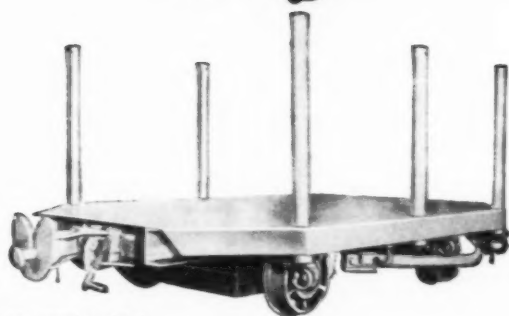
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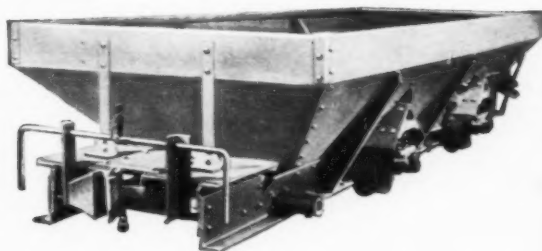


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NOTES AND COMMENTS

Putting Effort to Work

Courses in materials handling and work study are held by the College of Production Technology, Charing, Ashford, Kent, in most industrial towns. Senior executives, after attending the courses, often find on returning to their places of work that they wish to refer back to various points. It has therefore been decided to publish the study papers and make them available to anyone who may require them.

Materials handling is defined in the introductory paper as "the movement of everything—including people—inside and outside a building". It embraces the picking up and putting down, moving in a horizontal or vertical plane, or both, of materials or commodities whether bulk or unit—in their raw, semi-finished or finished state.

It is evident from this definition that the mining industry is the largest handler of materials in the world. For example, the South African gold mines are now handling more than 60,000,000 tons of ore a year, much of which has to be hoisted from great depth. Every time a material is handled something is added to its cost and often nothing, or very little, to its value. From case studies the College of Production Technology found that, on the average, for every ton of finished product, 48 tons of material is handled. It is obvious that this figure has no connection with the mining industry, which thinks nothing of handling several tons of rock to produce a single ounce of gold or a few pounds of nickel or copper. The efficiency of the handling methods is thus of even more critical importance to mining than it is to a secondary industry. Large mining companies and organizations such as the National Coal Board are major users of equipment for materials handling and devote much time and effort to the development of more efficient plant and methods.

The aim of materials handling is to improve working conditions, reduce fatigue, improve planning, control and distribution, and to fully utilize existing and proposed plant. Correct planning, selection and layout of equipment are thus of prime importance.

Work study is the analytical investigation of methods,

conditions, movement and effectiveness of industrial work. As a result of work measurement comparisons can be made of the relative monetary values of different production methods, layouts and handling. One of the first pioneers in this field was F. W. Taylor, who has been credited with the origination of time study. In 1898, at Bethlehem Steel Works, he undertook to improve methods in various parts of the plant. From 400 to 600 men were employed in the yard, mostly on shovelling material of various kinds, the greatest tonnage being iron ore. Each good shoveller owned his own shovel. Ore weighed up to 38 lb./shovel. Taylor found the optimum weight to be 21½ lb. and designed shovels of different sizes suitable for lifting that weight of ore. After 3½ years the same work was done by 140 men. The cost of handling was reduced from 7·8 c./ton to 3·4 c./ton, resulting in savings at the rate of \$78,000 per annum.

The example is a good one, as indicating the scope which exists for work study in the handling of materials such as ores. The South African gold mining industry has for some years been taking a practical interest in this aspect of management.

While much of the data on materials handling and works study published by the College of Production Technology is applicable to manufacturing operations in factories rather than to the bulk handling problems with which the mining industry is predominantly concerned, it is becoming increasingly important for the mining engineer to have a thorough understanding of materials handling and work study, particularly if his company is a small one which cannot afford the services of specialists. Present difficulties can often be traced to lack of co-ordinated development in the past, when the administration allowed itself to be influenced too much by the exigencies of the moment and agreed to haphazard extension not complying with a well thought-out plan.

The courses held by the College of Production Technology should be of value in assisting engineers to obtain a clearer understanding of the principles of materials handling and its associated subjects, thus enabling them to keep down handling costs and avoid the pitfalls of haphazard development.

Russia: One World for Trade

The U.S.S.R. appears to be gradually divesting itself of the veil of secrecy which has become almost a traditional feature of Soviet economic policy. The impenetrable curtain behind which its rulers have been accustomed to perform the mysterious wonders associated with their Five-Year Plans was lifted dramatically towards the end of last year to reveal Marshal Bulganin and Mr. Krushchev bestriding the Orient like genial colossi, and to no small purpose.

The Soviet Union, it was subsequently announced, will sell India 1,000,000 tons of steel during the next three years. It has also offered to supply machinery and other equipment to the value of Rs. 100,000,000 for oil drilling and for the exploitation of India's resources of diamonds and non-ferrous metals. We understand that Russian oil and mining experts are at present in India by Government invitation to act as consultants and also to consider the most effective forms which Soviet assistance can take.

Of scarcely less significance are the series of trade agreements which the Soviet Union has recently concluded with a number of countries outside its jurisdiction, from Burma in the Far East to Yugoslavia and even France. It is evident that the policy of economic isolation has been conclusively abandoned and that the present aim is to obtain a foothold in Asian and European markets for the development of an expanding export trade.

A further indication that Russia, whether because the outlook of its rulers is changing or because of its growing strength, is becoming less addicted to secrecy, is afforded by the latest Five-Year Plan, which takes the form of an all-out drive to "overtake and surpass" the capitalist West in industrial, atomic and agricultural development. For the first time the plan gives absolute figures for production increases instead of the percentages in which progress has previously been reported. The question marks against the Soviet outputs of most minerals and metals still remain and the directives constituting the plan are conspicuously silent regarding gold, although the accumulated gold stock probably exceeds the combined gold holdings of all European countries and production is believed to be on a scale surpassed only by South Africa. Reticence has been sufficiently abandoned, however, to reveal record targets for steel and coal of 68,300,000 tons and 593,000,000 tons per year respectively by 1960. The original targets, as set by Marshal Bulganin last July, were 60,000,000 tons and 500,000,000 tons. These figures are regarded as indicating that the dominant role of heavy industry will continue and that capital equipment will again have priority over consumer goods. It stands to reason that the expansion of steel and coal production must be matched by the Government's efforts to accelerate the development of base metal and other mineral resources and that mining activity is at a high and rising level.

One obvious fact that emerges from the new plan is that Russia's economic progress is securely based on a foundation broad and solid enough to permit the development of a very large export trade. It is also evident that British exporters cannot afford to adopt an apathetic or complacent attitude towards any potential market, or they might well find that while they were holding aloof the Russians had scooped the pool.

The immense programme of expansion contemplated by the current Five-Year Plan suggests that to no inconsiderable extent growing Soviet competition in the Far East and elsewhere is likely to be offset by the prospect of sizeable orders from Russia itself for capital equipment such as crushing and milling equipment, locomotives, cranes, dredgers, diesel engine generating sets and mining machinery of many kinds. The U.S.S.R. has the reputation of

being a reliable and prompt payer, as might be expected of a country with a gold stock reputed to be the second largest in the world.

One of the difficulties in the way of extending trade with the U.S.S.R. is, of course, the ban imposed on the export of strategic goods, but during the past eighteen months the embargo list has been substantially reduced. To many people the continued existence of any restrictions on mining equipment and supplies now seems an anachronism. Apart from the fact that a consignment of ball bearings, for example, can have little effect on the military potential of a country engaged in making bigger and better hydrogen bombs, it is virtually impossible to make any rational distinction between strategic or non-strategic goods, bearing in mind that machines currently making such innocent articles as buttons could doubtless be converted to the production of components of some kind for military weapons. Logic suggests, in fact, that no satisfactory compromise can be found between abolishing all restrictions or banning all trade.

Meanwhile exporters wishing to know whether a licence would be granted in respect of a particular product can obtain information and advice from the Export Licensing Branch of the Board of Trade, Atlantic House, Holborn Viaduct, London, E.C.1.

So far as the long-term consequences are concerned, the emergence of the Soviet bloc from its former condition of quasi economic isolation should do much to disrupt the present flow of trade along the arbitrary divisions imposed by dollar and sterling areas, which is the root cause of most currency problems of the present day. On balance, therefore, the effects of the development might well be favourable.

Lithium's Future Only Limited by Supplies

Apart from its reputed role in the production of hydrogen bombs, lithium is coming rapidly to the fore as a strategic and industrial material with an ever-widening field of applications. Discussions at a recent meeting of the Manufacturing Chemists' Association in the U.S. revealed that lithium compounds with hydrogen have been found to be a very great energy potential for types of engines other than those in jet planes and missiles. Union Carbide and Carbon, it was stated as an example, have been using a lithium additive to increase the octane of premium petrol.

Even without this potentially large new outlet a rising demand for lithium seems assured by the expansion of established uses and possibly by the future importance of this element in the generation of nuclear power. According to a recent forecast, consumption was expected to rise within a few years to perhaps 50 or even 100 per cent above the 1953 level, but current developments suggest that even the latter figure may be conservative. Existing production capacity in the U.S., in terms of lithium carbonate, is placed at between 10,000 and 12,500 s.tons annually, but consumption last year was probably under 4,500 tons.

The U.S. succeeded in expanding its output of lithium minerals about eight-fold during the period 1947-53 and is to-day the second largest producer. Yet domestic mine production still requires to be supplemented by importation from Southern Rhodesia, South-West Africa and Brazil on a substantial scale. Assuming, as seems probable, that lithium is on the threshold of an even more spectacular forward bound, it is evident that unless its own mine output can be very greatly increased, the U.S. must become heavily dependent on shipments from Africa and elsewhere.

An assessment of U.S. lithium reserves and resources has been made by James J. Norton and Dorothy McKenney Schlegel in a memoir entitled *Lithium Resources of North*

America, which has very recently been published by the U.S. Government as *Geological Survey Bulletin 1027-G*.

It is concluded that the U.S. and Canada have more than ample resources to support the continued expansion of the lithium industry without significant change in mining and milling methods or costs. The largest reserves are in the tin-spodumene belt of the Carolinas, which was first developed during World War II. Formerly deposits in South Dakota were the country's chief source of lithium minerals, and these deposits still contain significant reserves. In California lithium has been produced from Searles Lake brines since 1938, and during earlier years lepidolite was mined in the Pala district. Other States containing lithium deposits include New Mexico, Colorado, Wyoming, Connecticut, Maine and Massachusetts. Indicated reserves in the pegmatites of the U.S. amount to 5,000,000 units consisting of 20 lb. of Li_2O . Reserves in Searles Lake, California, are given as 9,000,000 units.

Canada has large reserves of spodumene and small reserves of other lithium minerals. The Cat Lake-Winnipeg River region of south-eastern Manitoba probably has at least 2,000,000 units of Li_2O . Three lithium-bearing pegmatites in the Preissac-Lacorne region, north of Val d'Or, Quebec, contain reserves of at least a few hundred thousand units. More recently this district has been intensively explored and reserves totalling several million units have been found. Spodumene and other lithium minerals are also known in the East Braintree and Herb Lake districts of Manitoba and in the Yellowknife-Beaulieu region of the North-West Territories.

The total inferred reserves in the U.S. and Canada are placed at not less than 125,000,000 units of Li_2O . In 1953 the U.S. domestic consumption was about 250,000 units, at which rate the North American lithium resources would last many hundreds of years. The average Li_2O content of the inferred reserves, however, is only 1.3 per cent, whereas the indicated reserves of the tin-spodumene belt of North and South Carolina average 1.7 per cent. So long as lithium minerals continue to be admitted duty-free, rising consumption in the U.S. is therefore likely to be accompanied by a corresponding increase in the demand for materials of higher grade. The long-term nature of the U.S. interest in African sources of supply was particularly well indicated by the recent formation of American Lithium Chemicals, a company owned jointly by the American Potash and Chemical Corporation and Bikita Minerals (Private) Ltd., which plans to use Southern Rhodesian ores for the manufacture of lithium chemicals at San Antonio, Texas.

Geological Research in Poland

The Polish Institute of Geology is engaged in recording in cartographic form the results of the researches of past years. In 1954 a geological map of Poland (scale 1:300,000), drawn up by Professor Edward Rühle, was published. A detailed geological map of the Upper Silesian Basin is scheduled to appear shortly, and work is in progress on a 1:50,000 map of southern Poland, including part of the Polish Plain, which will be published in the course of the next four years.

Geological research in Poland presents great difficulties, owing to the fact that two-thirds of the country's territory consists of plain land where it is impossible to investigate the geological structure of the deepest layers without drilling.

In the course of the next five years—the period covered by the new Five-Year Economic Plan—the greatest importance will be given to the search for oil. Professor Jan Samsonowicz, the distinguished geologist, is convinced that the Polish Plain has important deposits of coal, potassium salts and oil, which have not been prospected up to the

present. Research is being carried out over an area of about 32,000 sq. km., as a preliminary to borings which will attain a depth of some 10,000 ft. To the north, investigations are in progress of an oil field near Koszalin, Western Pomerania, which stretches out beneath the Baltic, while Polish and Russian geologists are co-operating in prospecting in the Bug Valley, where coal has been found along the frontier.

In so far as iron ore is concerned, an important discovery was made in 1955 by Jerzy Znosko of the Institute of Geology, who found new beds of iron ore in the Leczyca district, Łódź voivodship, which will be of great importance to the vastly expanded iron and steel industry where production of crude iron is to-day four times greater than in 1937. It is considered most probable that these deposits extend northwards towards Szczecin, and this year research will be concentrated on the so-called Kujawy-Pomeranian ridge.

Non-ferrous metals, notably zinc, lead, copper and nickel, are being prospected for, and last year also excellent deposits of natural sulphur were found at Tarnobrzeg and Szydłow, by Professor S. Pawlowski.

Canada

(From Our Own Correspondent)

Toronto, January 7.

Mining in Canada has entered the new year with every indication that the growth during 1956 may surpass that recorded in 1955.

The biggest gain will probably be in production of uranium from the Blind River area of Northern Ontario, and the Beaverlodge area of Saskatchewan, and in the expansion of iron mining in the new fields of Quebec and Labrador, as well as in the iron ranges of Steep Rock and Michipicoten in Ontario. Challenging uranium and iron in the order of growth is the continued expansion of petroleum and natural gas industries of Alberta, Saskatchewan, and Manitoba and the extensive plans for pipeline construction designed to distribute both gas and oil to the industrial centres of eastern and western Canada as well as to the north-western United States. Add to this the rising trend of nickel production as well as aluminium and asbestos. Also there are a number of new base metal mines being made ready for production of copper, lead and zinc in the province of New Brunswick, Quebec and Ontario.

Reflecting the expected rate of industrial growth in Canada for the next 25 years is a statement made by Dr. R. L. Hearn, Chairman of the Hydro-Electric Power Commission of Ontario, in which an expenditure of \$3,000,000,000 on power development is forecast. Of particular significance to the uranium mining industry is the forecast that the H.E.P.C. will commence using atomic power in 1958 and with expectations that the utilization of nuclear energy will play an increasingly important role in power development throughout the coming years. Indeed, the suggestion is made that in this one province the amount of nuclear energy in use by 1980 may rise to some 10,000,000 h.p.

In this connection, and remembering that the province of Ontario has a present population of less than 6,000,000, there is considerable ground for optimism among those now engaged in pioneering large uranium producing enterprises such as Algom Uranium, Consolidated Denison, Gunnar Mines, Pronto Uranium, and others. The question is being asked: If Ontario alone will require nuclear energy in such volume within so short a time, how much such energy may be required throughout the world as a whole?

Developments in Conveyor Design

Since the publication in *The Mining Journal* of the series of articles entitled *The Design and Use of Belt Conveyors in Mines*, by A. Grierson, developments in the field of conveyor design have continued in marked degree, and a supplementary article in our issue of September 9, 1955, gave an indication of those developments to be accomplished up to that time, particularly in Western Germany. The following article maintains our practice of adding to this existing knowledge as and when new types of conveyors are installed in mines in different countries of the world, and describes the developments in conveyor design and construction achieved recently in several countries of Europe and in the United States. The article is condensed from *Report of the Committee on Roadway Conveyors*, published by the National Coal Board. It should, of course, be borne in mind that the number of new conveyors is so great that mention of each individual unit is impossible. It must be indicated also that no mention is made of those new conveyors designed specifically for room and pillar workings owing to the predominance of longwall mining in the United Kingdom.

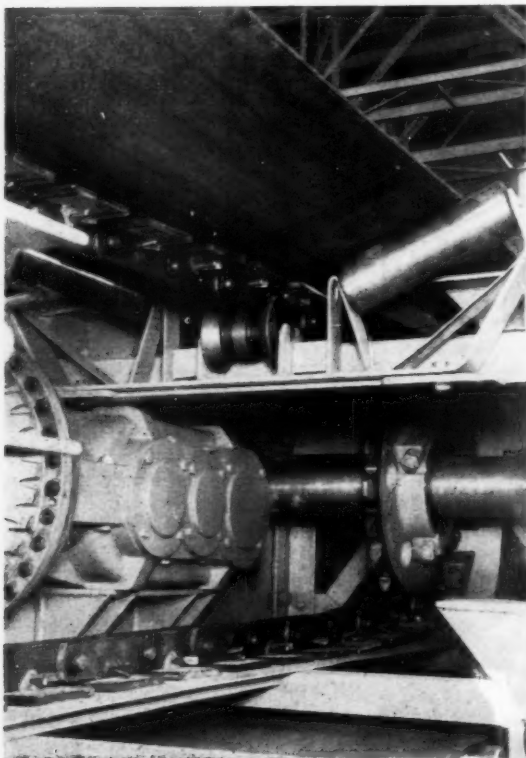
The development of new types of conveyor has taken various paths in different countries. In the United Kingdom the main new development has been focused on rope and chain-driven conveyors. Meanwhile, there has been a concentrated effort to develop efficient fire-resistant belting and to improve belt conveyors in minor ways.

In Germany, the developments from which source were more fully discussed in our previous article on September 9, 1955, the major attention has been paid to the development of the plate conveyor. Meanwhile, in the United States, attention has been concentrated on improving conventional types of conveyors.

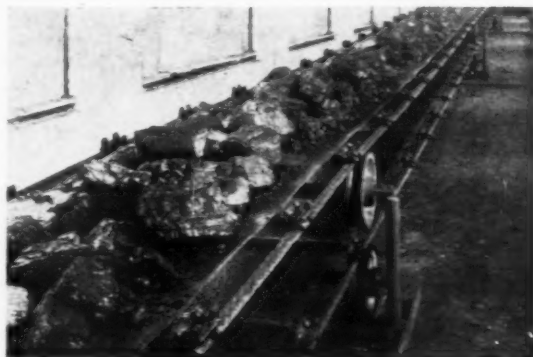
TRENDS OF ADVANCEMENT

The new developments in belt conveyor design and construction to have made most progress are:

- (a) Belt conveyors in which the power is transmitted not by the belting but by one or more ropes or chains;
- (b) Conveyors using a covered or uncovered steel band;
- (c) Reinforced belting;
- (d) Steel plate conveyors and other types.



The Horstermann chain belt conveyor



The cable belt conveyor manufactured by Cable Belt Ltd.

The duty of the conventional belt conveyor is limited by the power which can be transmitted by the belt. Heavy duty belting with as many as eight plies is not generally applicable underground because of the need for large driving, return and jib-end drums, and the resistance to troughing.

This limitation imposed by the strength of the belting frequently necessitates the use of conveyors in series with the corresponding additional driving units and transfer points. Particularly is this so with belts working uphill. Moreover, belting accounts for a large proportion of conveyor costs and there are therefore important advantages in those types of conveyor which do not use the belting to transmit the power required for carrying duties.

ROPE AND CHAIN-DRIVEN CONVEYORS

In several new British designs, the power is transmitted by ropes placed at either side of the belt with metal straps bridging the ropes at intervals and supporting the belt from below. A conveyor of this type is manufactured by Cable Belt Ltd., and several are working successfully in this country with others to be installed shortly. Idlers are not used, the ropes being supported on pulley frames spaced several yards apart along the run of the conveyor. Two other experimental installations employing the same principle are being developed by Naylor Bros. Ltd. and Ropeways Ltd.

In some new designs of rope driven conveyor, the belt simply rests on the rope or ropes. In one case, the Teversal Conveyor, structure closely resembling the conventional type is used but the rope is carried beneath the belting in grooved idlers.

Belt conveyors driven by chains are similar in design to those driven by ropes. In one case, the Horstermann, the structure is the same except that a chain runs beneath the belting which is supported on pads attached to the chain, the centre idler being shaped to carry the chain. The same company has developed a later conveyor using round link

chains. These Horstmann conveyors were fully described in our issue of September 9, 1955.

Two other designs, both British, incorporate chains. In the Meco conveyor, manufactured by The Mining Engineering Co. Ltd., the chains are set at each side of the conveyor belting connected by cross straps upon which the belting rests. In the other type, manufactured by the Crowlas Trading Co. Ltd., the driving chains themselves run beneath the edge of the belting and support it.

USE OF THE STEEL BAND

In Sweden, conveyor belts have been made from steel strip which can be either bare or covered with rubber or fire-resistant neoprene. Using conventional type structure and large diameter driving drums, this type of conveyor promises the following advantages:

- (a) The much stronger steel band can transmit far greater horsepower as compared with rubber or plastic;
- (b) The life of the belting is likely to be longer and the overall cost lower despite the higher initial cost;
- (c) The fire hazard is reduced;
- (d) Resistance to the weight and force of abrasive materials is strong; and
- (e) Joining the ends of the steel bands is said to present no difficulty.

A high standard of installation is necessary, however, and driving and return drums of large diameter are required. It may prove to be more difficult to maintain strict alignment than with conventional conveyors. Moreover, the steel band conveyor at present appears to be neither practicable nor necessary for gate conveying.

Several manufacturers in the United States have produced belting in which are inserted wires stranded together to form ropes of about $\frac{1}{4}$ in. dia. These ropes lie side by side along the belting and are spliced where joints are necessary.

These belts have some of the advantages of the steel band conveyor, but difficulties arising from rusting of the wires have been reported. Similar experiments are being made with nylon cords.

OTHER TYPES

In the steel plate conveyor the carrying medium is a series of steel plates, each in the form of a short trough, joined together with a slight overlap to form an articulated band. This type of conveyor was originally developed, mainly in Germany, for conveying in roadways driven according to common Continental practice on a level course in undulating seams. Designs are coming forward from the United Kingdom, however, and a conveyor, manufactured by Richard Sutcliffe Ltd., is already at work. The trend on the Continent is towards the use of round link chain which enables curves in the horizontal plane to be encountered. A normal straight plate conveyor is the Hauchinco, while the Prunte can negotiate curves.

In Germany, two conveyors produced for particular applications are the single strand conveyor manufactured by Maschinenfabrik Hemscheidt Wuppertal, a closed circuit unit continuous in a horizontal plane and which can turn corners, and the train conveyor manufactured by the same company. This consists of one or more trains or carrying units about 100 yd. long made from standard type plate section. By means of track switches and guide structure this conveyor can move along alternative routes.

Another conveyor, developed in the United Kingdom, is the Cowlshaw Walker heavy duty conveyor, useful for conveying down fairly steep gradients.



The Hauchinco belt conveyor showing intermediate drive



The Prunte centre chain flexible conveyor



The Meco chain belt conveyor manufactured by The Mining Engineering Co. Ltd.

Recruitment of White Labour for South Africa

In May last year a Directorate of Recruiting was established by the Transvaal and Orange Free State Chamber of Mines. This article describes its activities in Western Europe where recruitment, originally confined to learner miners, has been broadened to include trained miners, learner officials and artisans. It should be read in conjunction with an article published on November 12, 1954, which describes steps taken by the Anglo American Corporation to increase its supply of qualified mining engineers.

The need for more energetic measures to maintain the flow of trained undergraduates into the Commonwealth mining industry has repeatedly been emphasized. Last year a study by a joint committee of the British Overseas Mining Association and the Institution of Mining and Metallurgy led to the conclusion that the current intake into the universities and mining schools of young men offering themselves for training for technical posts in the industry, especially as mining engineers, was inadequate to meet the estimated needs of the industry five years and more ahead. In many parts of the Commonwealth difficulty is also being experienced in obtaining an adequate supply of learner miners.

SELLING MINING AS A CAREER

A reason sometimes put forward for recruitment difficulties is the growing preference of young men for "softer" and safer jobs, but those entering the mining profession can scarcely be said to lack the spirit of adventure. In all probability, the underlying cause of the trouble is more intensive competition from other industries and professions for men of the right type. Whatever the explanation, there is no doubt that if recruits are to be attracted in adequate quantities, mining must be "sold" to young men as an attractive and well-paid career with excellent prospects for advancement. Furthermore, a young man invited to leave his homeland and settle in another country must be shown that it is in his interest to do so. In these circumstances a successful recruiting campaign can no longer be waged by remote control.

In South Africa the shortage of skilled labour and qualified technical staff has been aggravated by the extension of gold mining to the Far West Rand and Orange Free State. During the past seven years the intake from local sources has been supplemented from time to time by recruitment from Britain and the Continent. Other countries in which recruiting has been carried on include Italy, Germany, Holland and Austria. Until a few months ago the main effort was concentrated on learner miners between the ages of 18 and 24, who are given practical training in the Government Miners' Training Schools in the Witwatersrand and O.F.S. mining areas. The trainees selected could emigrate to South Africa at the expense of the Schools after signing an indenture for a period of training of 468 shifts worked, which is usually completed in approximately 18 to 20 months. During the past three years approximately 1,200 learner miners have gone to South Africa from Europe.

In May this year the Transvaal and Orange Free State Chamber of Mines set up a Directorate of Recruiting, which is responsible for the recruiting of Europeans both in South Africa and overseas. The recruiting campaign has been extended to include trained miners under 30 years old (on the Continent only), learner officials and artisans. The decision to broaden overseas recruiting was taken because the overall expansion of industry in the Union, including gold mining and uranium production, had increased the strain on labour resources.

Learner officials are drawn from men between 18 and 22 having a University Entrance Certificate to a Department of Mining Engineering. Their National Service should have been completed, a requirement which also applies to

the other categories. They must be unmarried and must be prepared to work underground. The course lasts two years and is designed to produce potential mine managers. During this period the learner gains experience in every department of a mine. Full facilities are provided for study during training. After completing a year of the course, the learner official is eligible to apply for a bursary to attend the University of the Witwatersrand and take the degree of Bachelor of Science in Mining Engineering. The number of scholarships varies from year to year, according to the standards attained by the applicants. In 1955 26 scholarships were awarded to learner officials. Each scholarship is tenable yearly and is renewable; it embraces payment of tuition fees plus an annual grant of £150.

Arrangements are also made for undergraduates in Europe, on the recommendation of their professor, to be given a course of study lasting about three months during the last long vacation, in which they do practical work on a South African mine and at the same time have the opportunity of establishing contacts with prospective employers. The aim is to take as many penultimate-year undergraduates as possible from Britain and up to thirty a year from Continental universities where there are mining faculties.

The artisans sought are riggers, fitters, electricians, and boilermakers for steelplate work and the fabrication of structures. They must be men under 35.

EUROPEAN H.Q. IN LONDON

An office has been set up at Terminal House, Grosvenor Gardens, London, S.W.1, as a recruiting headquarters for Britain and the Continent and is administered from Johannesburg by the Director of Recruiting, Mr. Hugh McL. Husted, whose deputy, Mr. B. Young, is at present in London. The Secretary of the London Office is Mr. W. E. Gooday, a past president of the Chemical, Metallurgical and Mining Society of South Africa.

Permission has been granted by the Union Government to bring in a total of more than a thousand recruits a year, all categories included. The Chamber requests all Groups to indicate their requirements and recruits are allocated among them on a *pro rata* basis. Applicants are medically examined at one of the larger centres near their place of residence and, if accepted for training or employment, are flown to the Union. Learner officials and learner miners must be unmarried. Trained miners and artisans who are married may, by agreement with their employers, bring their wives and children to South Africa usually after they have been working for six months.

Advertisements are inserted in the most suitable newspapers in the countries concerned. According to the replies received, plans are made for a number of towns in each country to be visited by the recruiting teams. The countries in which recruiting has so far been arranged for are Britain, Eire, Norway, Sweden, Finland, Holland, Italy, Germany, and it is hoped to include Denmark. Recruiting, of course, is also being carried out in South Africa, where additional categories of men are sought.

The response from all countries has been encouraging and already a number of contracts have been signed.

New Altitude Records for World Steel

The increasing world demand for steel and the rising outputs which are meeting this demand on an international front, indicate a world-wide production figure that shows no signs of abating. In the following article our Iron and Steel Correspondent outlines the present situation of the industry and points out that the outlook for steel is set fair despite the possible loss of certain sections of the car manufacturing market.

The performance of the British steel industry in 1955 has been appropriately acclaimed. Under extreme pressure output has been pushed up nearly seven per cent to 19,800,000 tons and failing unforeseen setbacks the target of 21,000,000 tons in the current year should be easily surpassed. But in the light of experiences abroad the achievements of British steel are less impressive.

The seven member States of the European Coal and Steel Community (counting the Saar as an independent State) increased their steel output by 20 per cent to 52,500,000 tonnes (51,700,000 Ltons). U.S. steel production was increased by about 30 per cent to reach the record level of 117,000,000 tons; Russian crude steel production is estimated at 45,000,000 tons, a rise of 8 per cent over the previous year and Britain has now been replaced by Western Germany as the world's largest producer. Although British steel got off to a flying start after the war, the German industry, starting from scratch, has advanced at a far more rapid rate and in the current year hopes to sell 23,000,000 tonnes against the British target of 21,300,000 tonnes.

RISING PRICES NO DETERRENT

The ebullience of the steel market is amazing. Order books are almost certainly heavier than they were a year ago. Available supplies fall substantially below the demand, and rising prices appear to be no deterrent to consumers who are starving for steel.

World steel output in 1955, estimated at 260,000,000 tons, is likely to be 20 per cent above that of 1954 and has more than doubled since 1945. Moreover, on present plans world capacity is expected to rise by a further 70,000,000 tons to 330,000,000 tons by 1960.

To support the rising demand the U.S. steel companies have increased their annual capacity by 2,500,000 tons in the past year and are planning more spectacular expansion in the next quinquennium.

Among the salient objectives of the next Soviet five-year plan are the attainment in 1960 of outputs of 52,000,000 tons of pig iron and 59,000,000 tons of crude steel.

Canada's expanding steel consumption has inspired the \$70,000,000 programme for the increased capacity of the Hamilton plant of The Steel Company of Canada, and expenditures of \$27,000,000 by Dominion Foundries and Steel.

The South African Iron and Steel Industries Corporation is to increase the capacity of its works at Pretoria and Vanderbijl Park from 1,300,000 to 1,800,000 tons over the next few years.

Poland has adopted a five-year plan to raise crude steel production by 2,500,000 to 7,000,000 tons per annum and the tempo of the development and expansion of the Brazilian steel industry is being increased not only by a bigger domestic investment programme but also by the offer to foreign companies of special financial concessions as an inducement to set up new plants in Brazil.

The details of the sale of 1,000,000 tons of Russian steel to India to be delivered over the next three years are already known, and the negotiations for the building of a new steel plant at Durgapur in Western Bengal by a consortium of British interests and for the provision of a separate plant at Bhilai in Central India by the Russians

have not yet been finalized. But nowhere in the world is the sense of urgency in the expansion of steel capacity more keenly developed than it is in the Indian sub continent where the Pakistan Industrial Development Corporation has just announced the probable completion of its first steel plant in 1959. The initial output is put no higher than 30,000 tonnes but, subject to financial aid from the World Bank which has already been sought, the capacity of the plant will be doubled by 1961.

All these developments confirm the impression of a universal belief that the world's steel requirements have not yet reached their zenith and that despite some warnings of possible soft spots occurring in the automobile industry the outlook for steel is set fair. Advances in technology, which include the more efficient preparation of ore and scrap for furnace use, economy in coke consumption, the increasing use of gas and liquid fuel, and the introduction of the electric steel melting furnace, have helped to offset the rises in costs of labour and materials and heavier charges for sea and rail transport.

Thus, increases in the controlled prices of iron and steel have been kept within much narrower limits in this country than in either Western Europe or North America.

Imports of foreign steel on a colossal scale have proved to be the only alternative to a slow down in many important industries. It is estimated that U.K. imports last year amounted to about 2,500,000 tons—only 400,000 tons less than the aggregate exports. A sensible reduction in the volume of iron and steel imports should be possible this year as home production expands and that expansion is favoured by the accumulation of bigger stocks of raw materials, and the acceleration of ore imports. This is strikingly illustrated by the official statistics which show that arrivals in the first half of the year totalled 5,796,000 tons and in the second half 7,417,000 tons.

ROLE OF THE ORE CARRIER

Even yet iron ore supplies are not sufficiently large to admit of complacency and it is significant that some enormous specialized ore carriers have been built by the Japanese for the conveyance of ore from Western Canada. British steel interests have also embarked on a large scale programme for the building of ore carriers—of smaller dimensions—to ensure the regular shipment of supplies of material for the blast furnaces. British supplies are drawn from many sources, but a growing volume of ore from the Quebec Labrador deposits is being shipped to British ports and it is interesting to observe that plans, based on a thorough geological survey, have been elaborated for large scale iron ore mining in the sub Arctic region between Hudson Strait and Ungava Bay.

The British Steel industry, whose second development plan is due for completion in 1957-58, is now contemplating a further major expansion scheme to raise ingot production to 28,000,000 tons in 1962, and to install a £100,000,000 strip mill—probably in South Wales. Consultations on this latter project may not be confined to British circles and it is therefore interesting to observe that the High Authority of the European Coal and Steel Pool has appointed Jonkheer H. L. F. K. van Vredenburg, former deputy secretary-general of NATO, to be head of its London delegation with the rank of Ambassador.

THE BRITISH THOMSON-HOUSTON CO. LTD. IN 1955

The year 1955 saw a continued heavy demand both in the United Kingdom and overseas for all types of electrical equipment from factories of The British Thomson-Houston Company Ltd., and much of this equipment was destined for use within the mining industry.

For service overseas, two motor-driven 90 p.s.i.g., 20,000 c.f.m. compressors for the New Consolidated Gold Fields, South Africa, were put into service with satisfactory results, while nearer to home, other machines delivered during the year included a 645,000 c.f.h. turbine driven exhauster for the N.C.B. The manufacturers' interest in gearing units was represented by the completion of tests on a motor geared compressor set for Markham Main Colliery, Yorkshire. This was one of several compressor drives supplied for various applications.

The decision of the N.C.B. to adopt multi-rope friction hoists with associated precision gearing resulted in a large number of enquiries for this type of equipment. The first order was received from the Scottish Division for a tower-mounted winder with double-reduction gearbox of the divided drive type with the drive taken through the quill shaft in the gearbox and special flexible couplings. A special feature is the direct association of the first reduction pinion with the motor shaft whereby overall length is decreased, and if this design proves satisfactory in service it might well become the future standard for single motor, tower mounted winder drives.

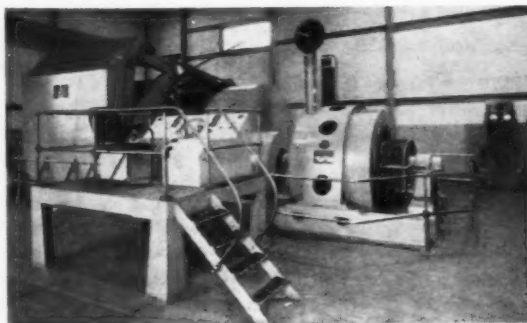
Further orders were received for two gear boxes from Brodsworth Colliery, Yorkshire, while in addition many gear boxes are being manufactured for auxiliary equipment.

Large numbers of Class "Q" switchgear units have been ordered by the Area Boards of the N.C.B.

SAFE USE OF PUMPLESS RECTIFIERS

An event of unusual interest occurred early in 1955 when Société Pechiney decided to use multi-anode air-cooled pumpless rectifiers for its new aluminium plant in the French Cameroons. This single pot line will have a rating of 95,000 amperes at 1,100 v., making it the largest in the world. The special protective schemes originated by B.T.H. for their recent electro-chemical rectifier installations had provided the means for safely employing pumpless rectifiers even in such very large stations. Seventy-eight pumpless tanks were ordered for the scheme. Further afield, in Australia, two 3,500 kW pumpless rectifiers were ordered by Broken Hill Pty. Ltd., for supplying part of a hot strip mill.

During the year much development work was completed on germanium power rectifiers and the first B.T.H. equipment of



The 1,450 h.p., 6,600 v. parallel drum winder at Haunchwood Colliery

this type to be installed was commissioned in August by Imperial Chemical Industries Ltd., General Chemical Division. The equipment is rated 1,000 kW., 255 v., 3,920 amps.

Several important winder installations were completed, amongst which were those of four of the nine 700 h.p. double drum sinking winders for the N.C.B., two at Abernant Colliery in South Wales and one each at Agecroft and Cotgrave Collieries in Lancashire and Nottinghamshire respectively. The mechanical portions were sub-contracted to Fullerton, Hodgart and Barclay Ltd., and to M. B. Wild and Co., Ltd. Brake engines were manufactured by Siemens-Schuckert. At Barony Colliery, Ayrshire, the 1,500 h.p. parallel drum geared A.C. winder for No. 3 shaft was commissioned during September with Fullerton, Hodgart and Barclay Ltd. as main contractors, while at St. John's Colliery, South Wales, a 1,000 h.p. drum winder was commissioned. At Haunchwood Colliery, Warwickshire, a 1,450 h.p. winder was put into service on the downcast shaft, the mechanical portion of which was purchased from Robey and Co. Ltd.

WINDERS AGGREGATE 16,300 H.P.

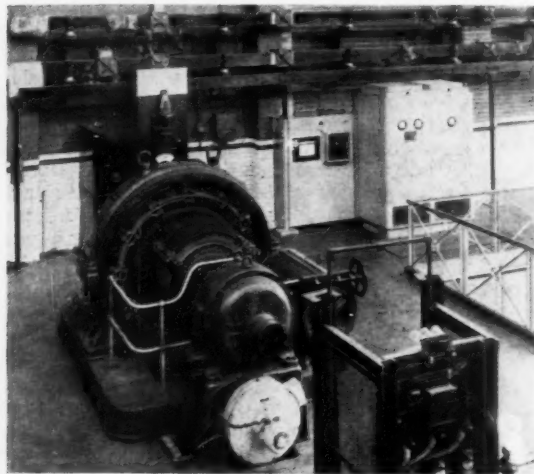
Electrical equipment for mine winders aggregating nearly 16,300 h.p. was installed during the year for the N.C.B., while in Australia the erection of the 750 h.p. Ward Leonard winder at Mount Isa Mines was completed in 1954 and the equipment commissioned early in 1955. Several A.C. geared winders were put into service in South Africa, amongst them two 3,500 h.p. units for Venterspost G.M. Co. Ltd. and 2,370 h.p. and 995 h.p. units for the Rand Mines Group. Many new orders were received for winders destined for service in collieries of the United Kingdom.

An interesting order came from Messrs. Walker Bros., of Wigan, covering the electrical equipment for two diesel-electric transportable emergency winders, while other orders received include those for flameproof air-break reversing contractor units, flameproof and industrial thrusters and switchgear of all types, as well as for fan, compressor and pump drives from the U.K. and abroad.

A comprehensive range of electrical equipment for the quarrying and earth moving industries was also supplied or ordered in 1955. In this connection, further orders were received from Stothert and Pitt Ltd. for Grademaster electrical equipments for tarmacadam production. These equipments are designed to provide automatic delivery of batches of graded stone from storage bins.

Two excavators of new design were commissioned, the first designated the W. 600 and manufactured by Ransomes and Rapier Ltd. is a half-size version of the W. 1400 walking dragline at Corby, and was supplied to United Steel Companies at Scunthorpe. The second was the 110-RB general duty excavator, described in *The Mining Journal* of January 6, 1956.

Other equipments supplied included cranes and furnaces.



1,000 kW. 255 v. germanium power rectifier at General Chemicals Division, I.C.I., Ltd.

MACHINERY AND EQUIPMENT

A Hydro Rotor Filter

The Keno hydro rotor filter manufactured by Keith Blackman Ltd., is an industrial type wet washer designed for the removal of finely divided dust from air streams. Typical applications, for example, would be dust removal from foundry knockouts and flue gases.



The Keno Hydro Rotor Filter

Basically, the unit comprises a water tank, a combined rotating enclosed helix and squirrel cage and set of eliminator plates, all contained in a cylindrical outer casing.

In operation, the water is elevated from the water or sludge tank by means of the rotating helix, on top of which is the squirrel cage fixture. This cage discharges the water at high velocity in more or less the form of a solid curtain across the path of the air stream. Thorough wetting and separation of the dust particles is thus ensured. Any water carried over in the air from this zone is removed by the eliminator plates in the top section. Water from the main spray drains back to the sludge tank to be re-elevated to repeat the cycle. In draining back, this water forms a curtain over the air inlet to the unit.

The action on the contaminated air stream may therefore be described as a threefold

one. First, the air passes through the water curtain at the inlet and the dust particles receive a preliminary wetting. Second, the air is violently scrubbed by the main water curtain thrown out by the squirrel cage—an operation which removes the bulk of the dust. Third, the air passes through the eliminator plates where the changes in direction and wetted surfaces trap the final particles of dust.

The standard range comprises 2,500 c.f.m., 5,000 c.f.m., 7,500 c.f.m. and 10,000 c.f.m. sizes. At maximum or rated volume the resistance is approximately 3.5 in. wg., this varying almost exactly as the square of the volume being handled. Owing to its compactness, the Keno filter can be used in compact sites.

A Range of Roof Bolting Tools

The success of roof bolting physically and economically, must be related to the effectiveness, speed and ease with which the bolts are set, and the roof bolting equipment shown in an interesting brochure published by The Consolidated Pneumatic Tool Co., Ltd., is the outcome of close study of the new technique. C.P. roof bolting equipment is presented as setting all roof bolts, either split rod and wedge or the shell type. Alternative equipment is available to suit the power in the mine, whether that power be electricity or compressed air.

Among the equipments listed are the No. 327 pneumatic roof bolt drill, which will operate in ground previously considered as outside the scope of rotary machines. Drilling speed is 5 f.p.m. Another unit, the No. 525 electric drill with mechanical power feed is a similar machine, and will drill 61 in. per min. on eight threads feedbar.

Screw feed provides the most flexible and rapid power feed

that has yet been evolved on a portable tool and enables the drilling speed to adjust itself to the nature of the roof strata. The clutch has an adjusting screw which is set to suit the particular drilling conditions and on C.P. units the standard thread bar has eight threads per inch, although an alternative 10-thread bar can be fitted where conditions necessitate a lower rate of feed.

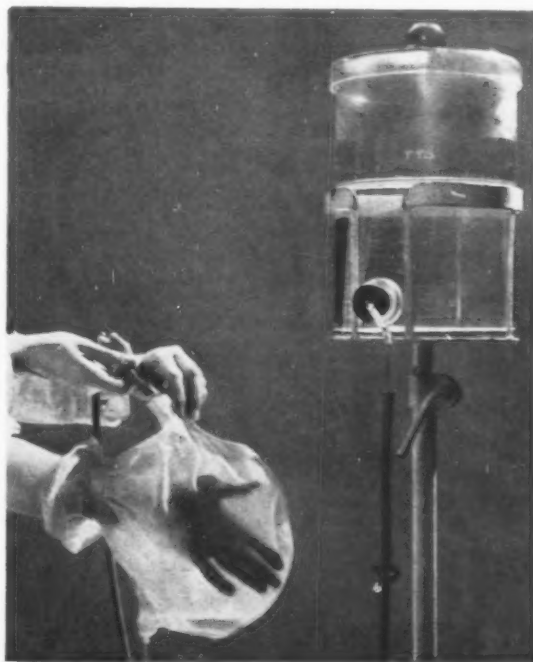
Other units described in the brochure are the No. 327 drill with air feed, functioning as a stoper drill. The direct thrust behind the machine running at 700 r.p.m. results in a high drilling speed, and the tool will deal with hard faces. In addition, the C.P. 32 stoper drill is recommended for hard faces, while the C.P. 115 roof bolt driver with air feed cylinder drives home split rod and wedge bolts in the minimum of time.

Additional equipments include pneumatic and electrical impact wrenches, the Model RBD 30 roof bolting drill and nut runner, 35½ in. in height in lowered position and operating at 3.5 f.p.m. (loaded 350 r.p.m.). Other units are dust collectors and compressors, as well as such accessories as bits, lubricators, dollies, sockets and couplings.

New Safety Application of P.V.C.

The various applications of P.V.C. within the mining industry have been enlarged by the use of Geon P.V.C. to replace oiled silk in the manufacture of the Stennard irrigation envelope. The envelope is used in the treatment of wounds, burns and ulcers throughout industry and in hospitals.

British Geon Ltd. claim that by the use of a special type of Geon P.V.C. sheeting designated "Fablon," certain advantages over oiled silk are attained. These advantages are that P.V.C. is more economical, that the envelope is not attacked by Milton, a 1 per cent electrolytic solution of sodium hypochlorite, and that it is non-toxic. The "Fablon" sheeting does not stick to the skin and it can be autoclaved at 6 p.s.i., remaining unaffected by temperatures ranging from -20 deg. C. to 110 deg. C. "Fablon" is also used as a wound dressing where the moderate water vapour permeability of this type of Geon P.V.C. sheeting constitutes an important factor.



Use of the irrigation envelope manufactured from Geon P.V.C. Sheetting

MINING MISCELLANY

A five-year agreement has been signed between Ramunia Bauxite Ltd., of Singapore, and South-East Asia Bauxites Ltd., a fully-owned subsidiary of Aluminium Limited of Montreal, whereby Ramunia Bauxite will mine, concentrate and treat bauxite ores on a contract basis on behalf of South-East Asia Bauxites Ltd. (SEABA). SEABA have important bauxite mining leases in the south-eastern part of Johore. The quantity to be mined under this contract agreement is in addition to Ramunia's own bauxite production, which now averages 200,000 tons per year.

The Ministry of Industry and Mining, the latest Turkish Government Department, is expected to start its work in Ankara in March. Certain sections hitherto under the control of other Ministries, such as the Board of Industry and Mining, the Electrification Division and the Reconstruction Division, will be amalgamated with the new Ministry.

The Krupp industrial concern of Essen is about to conclude a deal with the Brazilian Government for an \$850,000 joint investment project in Brazil. The group is already building steel plants in India and Pakistan and ore plants in Spain and Greece. Krupp hopes that the final details of the Brazilian project will be decided early next week in Düsseldorf in direct negotiation with Señor Juscelino Kubitschek, Brazilian President-elect. The firm has already approved the project and is awaiting the final assent of the Brazilian Government. The plan is to erect a factory which will first repair locomotives and later construct them.

Canadian mining history was made last month when the most modern coal transportation in the Dominion came into operation at Princess Colliery in Sydney Mines. Mr. Lionel Forsyth, president of DOSCO, pressed a button which set in motion a cable belt 3,800 ft. long. Claimed to be the only one of its kind in America, this conveyor runs through a tunnel stretching 3,915 ft. from the surface to a modern tippler which delivers coal cars on the belt at the rate of six per min. A DOSCO continuous miner has been installed at the coal face and by the end of 1956 the colliery will have ten continuous miners. The tunnel and other aspects of the mechanization programme will more than double production.

A statutory Board of Inquiry has been set up by the Gold Coast Government to investigate the economic condition of the local mining industry, with particular reference to the Gold Coast Mines Employees' Union's claim for higher wages, and the method of fixing wages in the industry. It was hoped that the Board would begin its work this week. African workers on the West African gold mines have been on strike since November 20 for a 15 per cent wage increase.

The Finnish Geological Research Institute has taken out an ore mining concession of 1,000 hectares in the border area between Kuru and Virdois in south-east Finland. Previous investigations of samples taken from the area showed traces of lead, zinc and copper pyrites.

President Ibanez has signed a decree which authorizes the Anaconda Copper Mining Co. to invest \$36,000,000 in machinery and equipment to expand its plants in Chile. Of this amount \$21,000,000 will be appropriated to modernize the plants and the balance to build new towns for the Chuquibambilla workers. The Anaconda mines produced 220,000 tons of electrolytic and blister copper in 1955. It is anticipated that as a result of the extensions production will be increased by approximately 45,000 tons per annum.

A new partnership between Canadian and Uruguayan interests to encourage and expand the use of aluminium and aluminium products in the growing markets of Uruguay has been announced. Aluminium Ltd. will subscribe a one-third share interest in the principal fabricating company in that country, Elaboracion General de Aluminio Y Metales, S.A. The agreement provides that in addition to its cash investment, Aluminium Ltd. will supply technical assistance and know-how

through engineering and fabricating specialists sent from North America, and where necessary through the training of Uruguayan staff outside their own country. Aluminium consumption in Uruguay in 1954 was approximately 1,750 tons and is expected to increase as the fabricating operation develops.

Public hearings into the operation and expansion of the \$100,000,000 U.S. government-owned nickel plant at Nicaro, Cuba, have opened at New York. A Congressional Subcommittee has been studying the management of this undertaking by G.S.A.

Canada is suffering from a severe shortage of geological and mining engineers, which may slow down development. Only 30 mining engineers graduated in spring. It has been stated that Canadian industry does not pay high enough salaries to mining engineers to induce students to enter this field.

The outlook for metals will be discussed at a round table session on the first day of the National Industrial Conference's Board's 364th meeting held on January 19 and 20 in New York. Authorities on the major metals will report on the current supply-demand situation as well as on possibilities for increasing supply.

Sir William Rootes, chairman of the Dollar Exports Council, has left for North America for a series of top-level discussions between British, Canadian and United States businessmen on methods of increasing Britain's trade to the dollar countries. He will be leading one of the most powerful and authoritative delegations of bankers and industrialists that Britain has ever sent to Canada. After preliminary talks in New York, he was to join other members of the Dollar Exports Council in Toronto for a joint meeting with their Canadian counterparts, the Dollar Sterling Trade Council. Members of the two councils will discuss what practical measures can be taken by industry in both countries to raise the level of U.K. exports to Canada. They will also study reports on Missions from leading Canadian industries—including metal mining—which have visited the U.K. in the past 18 months.

It is reported from Cape Town that the possibility of establishing a third steel works is under investigation by the South African Iron and Steel Industrial Corporation (Isacor). The combined capacity of the Pretoria and Vanderbijl Park works is being increased to a total of 1,800,000 tons of steel ingots per annum.

Lepanto Consolidated Mining Co. has engaged a geologist specializing in tungsten ores to investigate deposits of these minerals at an undisclosed site in the company's Philippine property. If this deposit is proved it will be the first tungsten mining operation in the Philippines.

Congressman John P. Saylor has charged the U.S. Atomic Energy Commission with "under-rating U.S. coal reserves and concealing Atom-power cost factors in its headlong drive to produce electricity from fissionable materials". Stating that any depletion of oil and gas resources could be overcome by fuels produced synthetically from coal and oil shale, he predicts that the demand for coal will increase from its present 400-500,000,000 tons per year to the billion-ton mark within 45 years.

Under a Trade agreement between Burma and Poland, signed on November 1 and valid for three years, Burma will export minerals and ores, timber, rubber, agricultural products and other goods and will import goods, machinery, ships, motor vehicles and other capital equipment. The Agreement provides for the establishment of a permanent Polish Trade Mission in Burma.

Aluminium Limited has announced plans for the construction of a smelter in India capable of producing 10,000 tons of

aluminium annually. The smelter is expected to double India's present aluminium production by 1958. Construction will begin this year. It is to be built in conjunction with a new multi-purpose power project now nearing completion by the Government of the State of Orissa at Hirakud and will be capable of expansion to 20,000 tons annually.

The U.S. firm, Harvey Aluminium Incorporated, has applied to the British Guiana Government for the exclusive permission to explore more than a million acres. The neighbouring Dutch Colony, Surinam, has rich bauxite deposits similar in geological formation to one existing in British Guiana.

PERSONAL

The Institution of Mining and Metallurgy has announced that a symposium on the extraction metallurgy of some of the less common metals will be held in the lecture hall of the Royal Society of Arts, 6 John Adam Street, Adelphi, London, W.C.2, on Thursday and Friday, March 22/23 next. All communications concerning the Symposium should be addressed to the Secretary, The Institution of Mining and Metallurgy, 44 Portland Place, London, W.1. Telephone: Langham 3802; telegrams: Minanmet, Norphone, London; cablegrams: Minanmet, London.

The Mond Nickel Fellowships Committee invites applications for five Fellowships of an approximate value of £900 to £1,200 each for 1956. Particulars and forms of application are available from: The Secretary, Mond Nickel Fellowships Committee, 4 Grosvenor Gardens, London, S.W.1. Completed application forms are required by June 1, 1956.

The Third International Light Metals Convention will be held at the Montanistische Hochschule at Leoben, Austria, on June 7 to 9 inclusive, 1956. As was the case on previous conventions in 1934 and 1948, a survey will be given on the present state of the light metals development. Lectures will be given by leading experts from Europe, Canada and the U.S.A.

A detailed programme will be published early in 1956. Information may be obtained from the Committee of the Third International Light Metals Convention, Leoben/Stmk., Austria, Montanistische Hochschule, Institut fuer Metallkunde.

The Leipzig Spring Fair will be held in Leipzig from February 26 to March 8 next.

At the request of the Indian Government Mr. F. C. Mann, of the Export Credits Guarantee Department, left recently by air for New Delhi to advise the Indian Ministry of Commerce and Industry on the establishment of a credit insurance scheme for Indian exporters.

"Electricity and Transport" will be the theme of the eighth British Electrical Power Convention, which is to be held at Torquay immediately after the Whitsun holidays under the Presidency of Sir John Dalton, A.M.I.E.E., F.C.I.S., chairman of W. T. Henley's Telegraph Works Co. Ltd.

The death is announced of Mr. Carl Davis at his home near Cape Town at the age of 82. Mr. Davis was a former director of the Anglo America Corporation of South Africa, and in 1946 he was awarded the gold medal of the Institute of Mining and Metallurgy.

Mr. W. M. Barclay has been appointed a director of Spaarwater Gold Mining in place of Mr. P. S. Hammond who has resigned and Mr. A. H. Herbert has been appointed alternate for Mr. W. M. Barclay.

Mr. J. K. B. Booth, geologist on the staff of Rio Canadian Exploration Ltd., who has been on home leave in the U.K. since the week before Christmas, will be returning to Toronto on January 28.

Major General W. W. Richards, Mr. L. P. Kent and Mr. L. C. Walker have resigned from the board of West Vlakfontein Gold Mining and Mr. E. Jacobson, Mr. P. Friedland, Mr. H. A. Mackay have been appointed in their place. Mr. Jacobson has been appointed Chairman of the Company.

Mr. James Bowman, deputy chairman of The National Coal Board, will succeed Sir Hubert Houldsworth as chairman on August 1 next.

Mr. E. J. Mercer, managing director of Allis-Chalmers Great Britain Ltd. since 1953, has been appointed general manager of the construction machinery division. Allis Chalmers Manufacturing Co., Milwaukee.

Mr. J. L. Ayre has been appointed purchasing agent of Hudson Bay Mining and Smelting in succession to Mr. J. W. Bringham who retired on December 1 last.

Mr. B. L. Goodlet, O.B.E., M.A., M.I.C.E., M.I.E.E., M.I.Mech.E., has been appointed Chief Engineer and Director of Brush Electrical Company, Ltd., from April 1. He is at present Deputy Chief Engineer at Harwell Atomic Energy Research Establishment, with responsibility for engineering research and development.

Mr. B. R. Cant has been appointed general works manager of the National Gas and Oil Engine Company Ltd., with effect from January 30. Mr. S. Cooper succeeds him as works manager, J. and H. McLaren Limited. Mr. Cooper joined the company on January 2 from Specialoid Ltd.

Mr. R. Klemin has been appointed to the board of The Anglo Metal Company and Mr. G. W. Emery has been appointed secretary in succession to Mr. G. F. Anderson who is relinquishing the office on April 1 next.

CONTRACTS AND TENDERS

Union of South Africa—Ten/17519, zinc ingots. Closing date, 3/2/56 B.O.T. Ref.: ESB/770/56.

Cambodia—The Board of Trade has been advised that purchases of the following commodities will be made by various Cambodian importers: Coal and related fuels, crude oil and petroleum products, non-metallic minerals, non-ferrous ores and concentrates, iron ore and concentrate, iron and steel mill materials, ferro-alloys, aluminium and aluminium base alloys, copper, brass and bronze products, lead and lead base alloys, nickel and nickel base alloys, tin and tin base alloys, zinc and zinc base alloys, miscellaneous industrial non-ferrous metals, generators and motors, electrical apparatus, engines and turbines, mining and conveying equipment, etc. B.O.T. Ref.: ESB/502/56/I.C.A.

Pakistan—The International Co-operation Administration has informed the Pakistan Government that the following procurement authorizations under the U.S. Aid Programme have been issued: Iron and steel mill materials, \$4,299,700, electrical apparatus \$1,490,000, miscellaneous industrial non-ferrous metals, and their products, \$27,500, lead and lead base alloys and their products \$17,300, etc. B.O.T. Ref.: ESB/581/56/I.C.A.

(Telephone enquiries should be made to Chancery 4411, Extension 360).

Mr. Allen E. Hause, President of the Allen E. Hause Co., 225 North Wilkinson Street, Ohio, has advised the British Consulate at Cleveland, Ohio, that he is interested in importing from the U.K. pillow block roller bearings with aligning features. B.O.T. Ref.: ESB/211/56. (Telephone, CHAncery 4411, Extension 776).

This information is supplied by the Special Register Information Service of the Board of Trade, Lacon House, Theobalds Road, London, W.C.1.

Baird and Tatlock (London) Ltd. announce that they have recently received the following contracts for laboratory installations:—

Northern Region Production Development Board, Kaduna, Nigeria. Value £2,400.

Veterinary Laboratories, Astrida, Belgian Congo. Value £5,000. The Laboratories of Thorium Ltd., Ilford, Essex. Value £13,000.

The Laboratories of the Castle Donnington Power Station, Leicestershire. Value £3,000.

METALS, MINERALS AND ALLOYS

COPPER.—The outlook for copper in the United States remained basically unchanged last week. There was, however, a slight shift in sentiment caused primarily by the strike at Phelps-Dodge's Laurel Hill refinery. When this strike first arose on January 10 it was described as local and wildcat and likely to be settled in 24 hours. It is still on. For a time it caused a notable firming of scrap prices and raised the level of No. 2 from 40 to 41 c.; there was a subsequent relapse to the lower level, but it climbed back to 40½ to 40¾. The general effect was to keep copper firm at its recent levels, with custom smelters selling for the entire first quarter at 50 c. and dealers getting 51 c. for nearby metal. The loss of metal from the refinery is not, of course, yet critical. But it is a loss that cannot be ignored in the present still stringent circumstances and it is also a reminder to the industry that strikes can at any time bedevil the whole situation. The big producers are still quoting 43 c. for such metal as they have for sale and there is no sign of any weakening. There is no ground for expecting weakness so long as custom smelters can get 50 c. for April metal and scrap is selling at an equivalent of 45½ c. for April refined.

Last week the president of The African Mineworkers' Union commented on the recent reports of African dissatisfaction with the proposals for African advancement. He said that his union had two objections; the first was that academic qualifications instead of "on the job" tests were to be the criterion of fitness for advancement (although he accepted the qualifications as a suitable goal for Africans); the second was that the proposed wage rates represented cheap labour and denied the principle of "equal pay for equal work" which his union supported. If this latter objection is persisted with it could throw the whole programme back into the melting pot.

Meanwhile Mr. Prain has been speaking informally to shareholders in R.S.T. in London. He told them that he was not aiming to damage the London Metal Exchange by his price stabilization policy; he claimed that his group had used the exchange more than any other since 1953 and that even more copper would be sent there when the group had more electrolytic available. This is a forecast that will be watched with interest. He also referred to R.S.T.'s interests in seeing the Federation develop at a faster rate so as to reduce the gap between the pace of development in the copper industry and the pace in the rest of the economy. He spoke of the possibility of R.S.T. interest in setting up a vast new farming industry if the investigations of Dutch agrarian and hydraulic engineers prove satisfactory. There is no doubt that to bring the rest of the economy rather nearer to the level of development of copper is an urgent need from which R.S.T. feels unable to stand aside. On the other hand the industrial world is littered with companies that have done badly from trying to extend their range of interest too far. It is a difficult decision for R.S.T. to make.

LEAD.—The second advance in the price of New York lead was not long held and the level dropped back to 16 c. per lb. It was said in this column last week that the development of bearish sentiment in London would make it impossible to hold the new price and so it proved. Nevertheless, it is interesting to reflect on the curious course of prices in the past few weeks. The strength of consumer demand on both sides of the Atlantic, the low level of American stocks, the rise in the L.M.E. quotation and the general tightness of supplies all combined to make the first rise to 16 c. quite reasonable. There followed a period when it seemed that prices would leapfrog in both London and New York to attract nearby supplies. But before the spiral had taken more than a twist weakness was suspected in the British car industry and the L.M.E. price spiralled down and not up. In view of the remarkable stability in lead in the past year it is an odd story. But it may well be that it is best considered as a likely foretaste of the future than as an erratic interlude. The American market, thanks to stockpiling, is no longer burdened with heavy stocks and changes in the economic outlook are more likely to be reflected in price. Furthermore although there is ample lead to be mined, producers outside America are cautious of expanding output too far because of the uncertainty of American tariff policy. If present circumstances persist (a high rate of industrial activity at large, relatively low stocks and some uncertainty about individual industries) then it may be that lead will follow a rather more volatile course in 1956 than in 1955.

Meanwhile lead demand in the United States last week remained steady and active, and toward the end of the week perceptibly strengthened. This strengthening in part reflected the rise

in London which in turn was caused mainly by the fear that the threatened strikes in the Australian ports would interfere with the flow of lead to the United Kingdom. If the L.M.E. quotation rises to a level at which Mexican metal is attracted to the United Kingdom then we may see another period of see-saw prices between London and New York.

TIN.—Tin slipped steadily in New York in the past week down to 104.50 before rising again to 105 c. per lb., for spot straits metal. The break in prices had the effect of scaring most American consumers out of the market except for the most urgent supplies. There have been signs of more urgent buying in the past few days which may now have reversed the downward trend in values. It is impossible for Americans to continue their frugal buying indefinitely and, while the recent rise in price may be thought to have been overdone, tin at its present figure may seem a bargain in the coming months. The supply-demand situation has not altered and the Texas smelter is still taking needed metal from the market.

The threatened strike at the Petaling Tin Mine was averted at the last minute by the intervention of the Labour Department.

ZINC.—Zinc continued steady in the United States in the past week on the basis of 13½ c. per lb. East St. Louis for prime western grade. Neither the slight reaction on London nor the fall in lead weakened the metal. Toward the end of the week there was a distinct firming up in the New York market and it seemed that the strength of London was just enough to outweigh the slightly depressing news about production in the American automobile industry. The sale of Ford stock must also have demonstrated a long term confidence in American automobile manufacture whatever the prospects of the industry in the next few weeks. It is worth repeating too that the G.S.A. can take larger offerings of zinc than it has done for many months past and can, therefore, provide an ample cushion for short term fluctuations in demand. It could not, of course, cushion a genuine and heavy fall in demand but then there is no reason to suspect that this is in sight.

ALUMINIUM.—Aluminium producers in the U.S. are optimistic about their prospects during the current year, partly because 1955 was their best year for aluminium in all respects—primary and secondary production, sales, shipments and consumption—but also because there is no sign of any let-down in demand or the development of new uses. A recently completed survey by Alcoa points to a growing demand from the motor industry, for which further evidence is afforded by a contract entered into between Reynolds and the Ford Motor Co., for the supply of aluminium over a 10-year period. These developments will be discussed more fully in a forthcoming issue of *The Mining Journal*.

The outlook for the aluminium industry in Canada has been summed up by Mr. R. E. Powell, president of Alcan, as one of increasing production, tempered by a shortage of metal during the remainder of the winter and extending into the summer months. Two major programmes were inaugurated last autumn. One adds 22,000 tons to the capacity of the Isle Maligne works and the other provides for an eventual 240,000 tons of additional production at Kitimat. It is expected that all the extra capacity at Isle Maligne will be put into operation this year, together with 90,000 tons of additional production at Kitimat. The remainder will be started up during 1957-59.

According to Frank R. Nichols, president of Nichols Wire and Aluminium Co., Davenport, Iowa, the greatest expansion of the aluminium industry outside the U.S. may take place in Africa during the coming decade. This forecast is based on two main factors; low weight, which makes aluminium products easier to transport, and freedom from rusting, which is vital to durability in damp climates. These factors have already made Africa a large market for foreign-made aluminium.

ASBESTOS.—It is generally believed that the demand for 1956 will exceed that of 1955 by from 5 to 10 per cent. In view of the major expansion of mining and milling facilities, Canadian producers are well prepared to handle the higher demand.

MANGANESE.—Due to shortage of shipping at Bombay not much business is being transacted in manganese ores there. The situation is reflected by the prices asked by sellers to offer shipping space. We are therefore quoting prices which are more applicable to the general situation.

NICKEL.—The U.S. Commerce Department at Washington has estimated that the U.S. "potential demand" for nickel in

1956 will be about 150,000 tons. American industry requirements are placed at a minimum of 117,500 tons, the balance being needed to meet defence demands. The demand for nickel in all industry groups is expected to be substantially higher than last year. A consumption level of 130,000 tons by 1960 for non-defence business is regarded as desirable and unattainable. The experience of 1955 indicates that the previous estimate of 120,000 tons for 1960 was too low. To maintain the 1955 consumption rate at the 1955 level it would be necessary to divert another 18,000 tons from delivery to the national stockpile.

The Department states that the supply of nickel last year was expected to reach a peak of 214,000 tons for the non-Communist world and 150,000 tons for the U.S. These figures are in close agreement with those recently given by I.N.C.O.'s chairman, Dr. John Thompson, who estimated production last year by non-communist countries at 213,500 tons, of which approximately two-thirds went to the U.S.

The report points out that uncertainty over supplies is harming industry, but adds that defence requirements must be met in full. Commenting on the long-term outlook, the Department sees prospects for a balance of supply and demand in the market after 1957, as the Government gradually tapered off stockpile buying, but both this assumption and its forecast on a short-term basis are subject to change "depending on security requirements." In order for industry to consume nickel at the levels of supply anticipated in the completion of stockpiling, nickel consumption will have to increase by 50 per cent.

QUICKSILVER.—Buying interest in quicksilver shows no signs of picking up and prices have resumed the downward drift which went on uninterruptedly throughout 1955. The present London ex-warehouse price for the metal is indicated at from £88 10s. to £89 per flask compared with £88 15s.-£89 5s. recently and around £109 10s. a year ago. Keen competition is reported for the limited business circulating.

THORIUM.—The U.S. Atomic Energy Commission has raised the basic price of thorium to \$43 a kilogram. The former price of \$25 was found to be unrealistic, being close to the actual cost of the raw materials going into the process. The upward revision is believed to be high enough to interest private enterprise in the production of a metal likely to be of great importance as a low-cost nuclear fuel. A \$55,000,000 nuclear power plant which Consolidated Edison of New York is planning will have 8,100 kilograms of thorium in a blanket around the uranium fuel. This plant is being designed and built by Babcock and Wilcox.

TITANIUM.—The capacity of the Stallingborough, Lincs., titanium oxide production plant of Laporte Titanium is to be increased by a further 12,000 tons a year, reports the *Financial Times*. The plant, which was built in 1953, is now operating at a capacity of 18,000 tons. British Titan Products, who manufacture titanium oxide in the U.K., are engaged on major extensions to their production plant at Grimsby. These extensions should be completed by 1957. British Titan Products is associated with Peter Spence and Sons in Titanium Intermediates, which is engaged in the manufacture of titanium tetrachloride—the material from which titanium metal is made.

Preliminary investigations suggest that the Transkei coast may become one of the largest potential sources of titanium minerals in the world. Negotiations are reported to be in progress between Mr. Denis Godfrey, who discovered them, and representatives of well-known overseas mining industries. It is possible that a large-scale investigation may be made.

The London Metal Market

(From Our Metal Exchange Correspondent)

With the news of cutbacks in motor car productions in both the U.S. and the U.K., metal markets have developed a weak undertone which, however, has not been sufficient to prevent buyers appearing on all occasions when prices have suffered a severe and rapid setback. Generally speaking, it is felt that the present level of copper is only being maintained by the necessity for some works to purchase metal for delivery during the first quarter, and that after a few more strike-free weeks the general level will come down. With lead and zinc, however, there seems no reason why present prices should not be maintained, and those holding this view were heartened by the rapid recovery which took place after the heavy falls early in the week. An additional factor, especially in the case of lead, is the imminence of a dock-strike in Australia, as any curtailment of shipments from that source to Europe is likely to cause a bigger backwardation and possibly higher prices.

In the case of copper and lead the basic factor in the market remains the competition between the European and American

markets, and at the moment the London copper price is sufficiently high to prevent metal flowing westward across the Atlantic whilst the London lead price is regaining a level which may attract Mexican material eastward across the Atlantic.

It is difficult to understand the zinc situation although it can be reported that the demand for high-grade metal in America seems to be satisfied, and this may, through a chain reaction, result in more zinc being available both in Europe and the States, but in the latter it is expected that all offerings to the stockpile will be accepted owing to the small tonnages which have been made available during the past few months.

The backwardation in copper in London has increased very rapidly owing to shipments of physical metal to both the U.S. and Europe, but it seems that the level the cash quotation has now reached, combined with the size of the backwardation, has put a stop to this.

The tin market has been active, but the underlying trend is very uncertain and there seems little reason to expect any drastic fall in price. On Thursday morning the Eastern price was equivalent to £818½ per ton c.i.f. Europe.

Closing prices and turnovers are given in the following table:—

	January 12		January 19	
	Buyers	Sellers	Buyers	Sellers
Copper				
Cash	£385	£386	£392	£393
Three months	£374½	£375	£373½	£374½
Settlement		£386		£393
Week's turnover		6,325 tons		4,975 tons
Tin				
Cash	£816	£817	£817½	£818
Three months	£803	£804	£801½	£802
Settlement		£817		£818
Week's turnover		535 tons		1,150 tons
Lead				
Current half month	£117½	£117½	£116½	£117
Three months	£116	£116½	£115½	£115½
Week's turnover		5,125 tons		7,625 tons
Zinc				
Current half month	£100½	£101	£99½	£100
Three months	£97½	£98	£96½	£96½
Week's turnover		8,775 tons		5,775 tons

OTHER LONDON PRICES — JANUARY 19

METALS

Aluminium, 99.5%, £179 per ton	Nickel, 99.5% (home trade) £519 per ton
Antimony—	Osmium, £24/27 oz. nom.
English (99%) delivered, 10 cwt. and over £210 per ton	Osmiridium, £40 oz. nom.
Crude (70%) £200 per ton	Palladium, £8 0s./£8 10s. oz.
Ore (60% basis) 23s. 6d./24s. 6d. nom. per unit, c.i.f.	Platinum U.K. and Empire Refined £32 10s. oz. Imported £42 0s./£42 10s. oz.
Bismuth (min. 1 ton lots) 16s. lb. nom.	Rhodium, ££40/£42.
Cadmium 12s. 0d. lb.	Ruthenium, £16/£18 oz.
Chromium, 6s. 11d./7s. 4d. lb.	Quicksilver, £88 10s./£89 ex-warehouse
Cobalt, 21s. lb.	Selenium, 72s. nom. per lb.
Gold, 249s. 2d.	Silver, 78d. f.o.z. spot and 77½d. f.d.
Iridium, £29/31 oz.	Tellurium, 15s./16s. lb.
Manganese Metal (96%-98%) £269 according to quantity	
Magnesium, 2s. 4d. lb.	

ORES, ALLOYS, ETC.

Bismuth	60% 8s. 3d. c.i.f.
	20% 3s. 3d. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (semi-friable) 48%	£15 2s. 6d. per ton c.i.f.
" Refractory 45%	£14 2s. 6d. per ton c.i.f.
" Smalls 42%	£12 2s. 6d. per ton c.i.f.
Magnesite, ground calcined	£26-£27 d/d
Magnesite, Raw	£10-£11 d/d
Molybdenite (85% basis)	105s. 3d.-108s. 1d. per unit c.i.f.
Wolfram and Scheelite (65%)	270s. 0d./275s. 0d. c.i.f.
Tungsten Metal Powder (98% Min. W.)	21s. 6d. nom. per lb. (home)
Ferro-tungsten (80%-85%)	18s. 6d. nom. per lb. (home)
Carbide, 4-cwt. lots	£39 3s. 9d. d/d per ton
Ferro-manganese, home	£54 10s. 0d. per ton
Manganese Ore Indian c.i.f. Europe (46%-48%) basis 110s. freight	90d./95d. per unit c.i.f.
Manganese Ore (43%-45%)	80d./85d. per unit c.i.f.
Manganese Ore (38%-40%)	65d./68d. per unit
Brass Wire	3s. 6½d. per lb. basis
Brass Tubes, solid drawn	2s. 11½d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Stock markets have been going through a period of uncertainty and prices drifted downwards, awaiting a lead from the Prime Minister's speech. This takes place as we go to press and no comment on the reaction is possible. Revenue has been coming in well but the overall surplus last week was less than for the comparable period in 1955 and the overall deficit to date is some £180,000,000 greater than last year.

Kaffirs have been a weak market, partly due to South African political developments and partly to selling by stale bulls in Johannesburg. The promising results of the Anglo American quarterlies were ignored as a factor.

Finance houses were nearly all lower with one or two notable declines. Johannesburg Consolidated fell back due to the falling off in ore reserves and the less satisfactory figures from their leading mines. Union Corporation also came back sharply on rumours concerning the possible issue terms of the new Winkelhaak mine in the Transvaal. Details are expected to be announced as we go to press but it is thought that the 10s. shares may be offered to the public at 15s. each with no special rights appertaining to Union Corporation. This brought about a sharp fall in the company's shares. This property will be an interesting one, it is reported to be of comparatively shallow depth and work has already begun in the area.

Among individual Rand mines, falls were widespread. Brakpan achieved a notable increase in values and payability was slightly up at 27 per cent. This tended to have a steadying influence on the stock. The fall in the gold reserves of Randfontein caused a sharp setback in this company. Values disclosed by Vaal Reefs disappointed the market although payability was held at 84 per cent. Western Reefs were also marked down due to the less good results.

In the Orange Free State section, prices were also well down. Freddie's Consolidated remained virtually unchanged despite the discouraging outlook, this had already been fairly fully discounted in market price. Interesting results came in from Free State Geduld, the company's two shafts were joined during the

period which will enable more work to be done underground and the drive from Western Holdings into the company's area has disclosed good values. Harmony touched their lowest price since 1953 and prospects for this mine, although satisfactory are being viewed on a long term basis. The better figure from Merriespruit cushioned the fall in these shares. Middle Witwatersrand have acquired an interest in the Bethal area where prospecting is taking place. The two President mines and Welkom also showed encouraging returns but partly due to the fact that uranium loan repayments will have to begin at the end of the current quarter, these shares also participated in the general setback. The 79 per cent payability and rise in values at Western Holdings were unable to support this stock.

Elsewhere among gold producers, there was little to report, but the Russian suggestion that Baltic gold holdings might be used in compensation for the Lena expropriation caused a revival of interest in Russo Asiatic which rose from 1d. to 1½d. It is thought that the British Government would be unwilling to consider this particular factor apart from a general settlement of pre-1917 Russian debts.

Coppers suffered from the general malaise and most of the leading properties lost the turn, an exception being Rio Tinto.

Eastern tin shares responded favourably to reports that the talks between the Malayan Prime Minister and the Colonial Office are proceeding along constructive lines. The slight setback in the price of tin had little effect since it is still standing at a high level. The calling off of the proposed strike at Petaling was also taken as an encouraging feature. Beryl tin and wolfram were little changed despite the lower tungsten price.

Lead/zincs were sharply affected by the setback in the metal prices and the threat of an Australian dock strike. There was a noticeably steadier tend at the lower levels.

Among Canadian mines, prices were little changed. The strong demand for nickel failed to hold the price of INCO due to uncertainty concerning the end of American stockpiling which is expected before long.

Finance	Price Jan. 18	+ or - on week	Rand Gold contd.	Price Jan. 18	+ or - on week	Diamonds and Platinum	Price Jan. 18	+ or - on week	Tin (Nigerian and Miscellaneous) contd.	Price Jan. 18	+ or - on week
African & European...	2 1/2	-	W. Rand Consolidated	35 1/2	-7 1/2				Gold & Base Metal	1 7/4	-1 1/2
Anglo American Corp.	22 1/2	-1	Western Reefs	32 1/2	-1 10/16				Nigeria	5 1/2	+1 1/2
Anglo-French	23 1/2	-							Jon Tin Area	14 1/2	+1 1/2
Anglo Transvaal Corp.	27 1/2	-	O.F.S. Gold						Kaduna Syndicate	2 1/2	-
Central Mining (E.I. shrs)	40 1/2	-9d	Freddies	6 1 1/2	-3d				Kaduna Prospector	2 1/2	-
Consolidated Goldfields	54 1/2	-3 1/2	Geoffries Consolidated	4 4 1/2	-3 1/2				London Tin	10 1/2	-
Consol. Mines Selection	35 7 1/2	-1 1/2	F.S. Gold	12 1/2	-1 1/2				United Tin	1 1/2	-
East Rand Consols.	1 1/2	-	Geoffries	12 1/2	-1 1/2						
General Mining	4 1/2	-	Harmony	25 1/2	-9d						
H.E. Prop.	6 10 1/4	-1 1/2	Loraine	5 1/2	-6d						
Johnnies	37 1/2	-1 1/2	Lydenburg Estates	13 1/2	-1 1/2				Silver, Lead, Zinc		
Rand Mines	34 1/2	-	Meyerspruit	9 1/2	-6d				Broken Hill South	57 1/2	-1 1/2
Rand Selection	38 1 1/2	-1 7/8	Middle Wits	11 1/2	-3 1/2				Burma Corporation	2 1/2	+1 1/2
Union Corporation	39 1/2	-6 1/2	Ofits	53 1/2	-1 1/2				Consol. Zinc	53 1 1/2	-2 1/4
Vereniging Estates	4 1/2	-	President Brand	56 10 1/2	-3 1/2				Lake George	13 1/2	-9d
Wits	35 7 1/2	-7 1/2	President Steyn	29 1/2	-3 1/2				Mount Isa	62 1/2	-7 1/2
West Wits	38 1/2	-1 1/2	S. Helena	24 1/2	-6d				North Broken Hill	43 1 1/2	-2 1/4
			Virginia Ord.	9 1/2	-7 1/2				North Broken Hill	89 1/2	-1 1/2
			Welkom	16 1/2	-3d				Rhodesian Broken Hill	13 1/2	-10 1/2
			Western Holdings	3 1/2	-6d				San Francisco Mines	29 1/2	-3d
									Uruwira	6 1/2	-6d
Rand Gold									Miscellaneous		
Blyvoors	22 1/2	-9d							Base Metals and Coal		
Brakpan	5 1/2	-6d	West African Gold						Amal. Collieries of S.A.	47 1/2	-
Buffelsfontein	2 1/2	-2 1/2	Amalgamated Banket	2 1/2	-				Associated Manganese	34 1/2	-3 1/2
City Deep	10 1/2	-3d	Ariston	5 1/2	-				Cape Asbestos	10 1 1/2	-
Consol. Main Reef	2 1/2	-	Ashanti	20 1/2	-3d				C.P. Manganese	34 1/4	+1 1/2
Crown	24 1/2	-	Bibiani	3 1/2	-1 1/2				Consol. Murchison	53 1 1/2	-2 1/2
Dominion Reefs	21 1/2	-1 1/2	Bremang	1 7 1/2	-				Natal Navigation	3 1/2	-
Doomfontein	21 1/2	-1 1/2	G.C. Main Reef	2 1/2	-				Turner & Newall	107 1/2	-1 1/2
Durban Deep	28 1 1/2	-7 1/2	Konongo	2 1/2	-				Wankie	18 1/2	-3d
E. Champs	3 1/2	-3d	Lyndhurst Deep	1 1/2	-1 1/2				Witbank Colliery	5 1/2	-
E. Daggas	29 1/2	-1 1/2	Marlu	6d	-						
E. Geduld (A.E. units)	29 1/2	-1 1/2	Taah	19 1/2	-3d						
E. Rand Props.	2 1/2	-	Western Selection	8 1/2	-						
Geduld	4 1/2	-									
Govt. Areas	5 1/2	-3d	Australian Gold						Canadian Mines		
Grootvlei	20 1/2	-9d	Gold Mines of Kalgoutie	12 1 1/2	-				Dome	52 1/2	-1 1/2
Hartbeestfontein	33 1/2	-9d	Great Boulder Prop.	10 1/2	-				Hollinger	54 1/2	-1 1/2
Libanon	16 1/2	-9d	Lake View & Star	16 1/2	+6 1/2				Hudson Bay Mining	51 1/2	-1 1/2
Lupatla Vlei	20 1/2	-9d	Mount Morgan	23 1/2	-6d				International Nickel	51 1/4	-9d
Marievale	20 1/2	-9d	North Kalgoutie	7 10 1/2	+4 1/2				Mining Corp. of Canada	2 1/2	-
New Kleinfontein	5 1/2	-3d	S. of Gwalie	3 1/2	-				Noranda	59 1/4	-

COMPANY NEWS AND VIEWS

Winkelhaak Offer

The long anticipated initial flotation arising from Union Corporation's investigation in the Bethal area of the Far Eastern Rand has taken the form of an offer of 1,750,000 shares of 10s. each at 15s. in a property named Winkelhaak Mines. Twenty-eight borehole results have proved this mine to be underlain by the Kimberley reef at shallow depths. It is some 7½ miles E.S.E. of Johannesburg. Production plans envisage a mill throughput of 60,000 tons per month after about 3½ year's work. With the addition of a third shaft the rate of 100,000 tons per month should be reached after a further two years. Capital expenditure is estimated at some £10,500,000.

In their present depressed state it will be interesting to see how gold share markets receive the offer when lists open on January 26. At first sight it would appear that Winkelhaak's issued capital is heavy in relation to the grade available. Moreover, the future will, no doubt, witness demands for further capital.

Anglo-Rand Offers Winkelhaak at 1 for 4 Ratio

Anglo-Rand Mining and Finance Corporation intends to offer its shareholders a total of 450,000 Winkelhaak shares acquired at par from Union Corporation. These shares will be made available at 15s. in the ratio of 1 for 4. The difference between par value and the offer price, it is stated, will accrue to Anglo-Rand.

Rand and O.F.S. Quarterly Reports

Quarterly reports in respect of operations during the three months ended December 31, 1955, have now been received from the Central Mining, Johannesburg Consolidated and Anglo American groups.

The main feature of Central Mining Group quarterly reports was a rise in values at Harmony. From a total of 3,140 ft. sampled of which 70 per cent was payable a value of 471 in. dwt. was obtained. This compares with 2,635 ft. with a payability of 62 per cent and values of 410 in. dwt. during the previous quarter. A total of 3,107 ft. has so far been driven in the twin haulages from No. 3 shaft towards the site of the new No. 2 shaft. Twenty-eight boreholes drilled from these haulages into the Basal Reef have yielded an average of 14.04 dwt. over 26 inches equivalent to 365 in. dwt. At Blyvoor 4,395 ft. were sampled of which 96 per cent was payable with value of 632 in. dwt. During the September quarter 3,420 ft. were sampled 87 per cent being payable averaging 665 dwt.

At Freddie's Consolidated in the Johannesburg Consolidated Group 3,795 ft. were sampled representing 63 per cent payability averaging 396 in. dwt. This compares with 358 in. dwt. at 54 per cent payability during the previous quarter. Ore reserves as at December 31, 1955, totalled 885,400 tons at 5.0 dwt. over 41 inches. This represented a slight improvement from the previous figure of 815,000 tons at 4.2 dwt. over 44 inches in respect of 1954. Sales of F.S. Geduld shares to the Anglo American Corporation and Johannesburg Consolidated during the past quarter reduced the company's holding to 105,000 shares at December 31, 1955.

Coming hard on the heels of Mr. H. F. Oppenheimer's recent statements to shareholders of six Anglo-American O.F.S. mines are the group's latest quarterly reports.

At President Steyn values moved up sharply to 480 in. dwt. from 398 in. dwt. Values had recently been falling due to the necessity of diverting development to the area between No. 1 and No. 2 shafts and were not expected to improve until work was resumed in the southern section during 1956. The past quarter's rise in gold content thus represented an unexpected windfall.

Back on form after some months of unspectacular results, President Brand announced values of 1,053 in. dwt. compared with 921 in. dwt. This was, indeed, encouraging bearing in mind Mr. Oppenheimer's statement that a slight fall in grade would soon take place. It would not, of course, be fair to isolate this statement from its full context which emphasised that despite a slight reduction in grade, profits and dividends should continue to rise.

Meanwhile F.S. Geduld's values improved during the quarter to 798 in. dwt. from 720 in. dwt. Payability remained at 90 per cent. These values included 190 ft. of development sampled in Western Holding's drive averaging 1,821 in. dwt. at 100 per cent payability. This compared with a total of

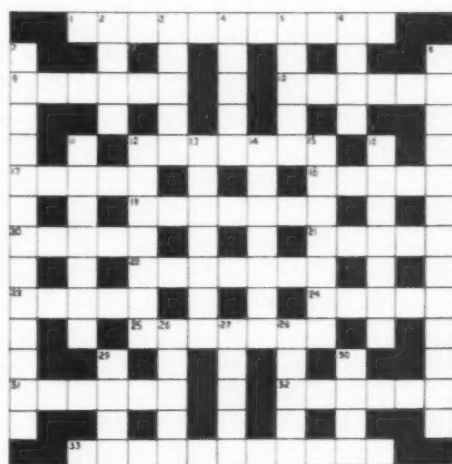
260 ft. sampled during the previous quarter which was also 100 per cent payable having a value of 1,864 in. dwt.

Although values obtained from Loraine's Basal Reef at 238 in. dwt. showed little change from the previous figure of 234 in. dwt., footage sampled on the "B" reef gave extremely good results. Sampling of 1,625 ft. on this horizon—of which 52 per cent was payable—yielded 786 in. dwt. This compared with a total of 790 ft. sampled during the previous quarter of which 60 per cent was payable averaging 793 in. dwt. Loraine being a marginal proposition would benefit considerably from continued satisfactory development of its "B" Reef.

Brakpan reported the unexpectedly good values of 953 in. dwt. compared with 763 in. dwt. previously. Although these were so far the best results obtained from the footwall reef they must be assessed in conjunction with the expectation that mill grade ultimately obtained will show a considerable discrepancy from that indicated by development.

S.W. Africa Co. Quarterly Report

The annual report of The South West Africa Company in respect of the year ended June 30, 1955 (details of which are given elsewhere on page 100) was accompanied by a quarterly report covering the three months ended December 31, 1955. During this period 1,694 tons of lead-vanadium concentrates were produced at the Abenab West Mine containing 716 tons of lead and 244 tons of vanadium pentoxide. This compares with 696 tons and 240 tons respectively during the previous quarter. Increasing difficulty was experienced in maintaining a sufficient supply of ore from reserves in that section of the mine being worked. A substantial tonnage was therefore again drawn from old tailings. At the Berg Aukas Mine output totalled 209 tons of lead-vanadium concentrates containing 92 tons of lead and 38 tons of vanadium pentoxide. No metals were produced during the previous quarter. A total of 83



* UNICONE * CROSSWORD No. 14

ACROSS.—1. These are 9 (11). 9. See 1(6). 10. Fuddle (6). 12. Stop a snake on the road (7). 17. Put a short year in good French for poetry (5). 18. Sailor's poem? About home presumably (5). 19. What the Butler saw? (7). 20. If there is a 33 there is also one of these (5). 21. Not a clever fellow (5). 22. Opposite of instep perhaps (7). 23. I mean a bridge here (5). 24. Much told tales (5). 25. Don's had his tea (7). 31. A 3D artist (6). 32. Use this to fill the bottle (6). 33. Put your shirt on it (1,4,6,1).

DOWN.—2. Blow it (4). 3. A 7 requires four of these (5). 4. You'll find this in the river (5). 5. Prophetess who might give you a 33 (5). 6. Sounds just as unfeeling without its last letter (4). 7. Two sides to

this (8, 5). 8. Herb plies Rene and Deserves censure (13). 11. Give or gift (7). 12. Air done for pressure gauge (7). 13. It's North End might take part in 7 (7). 14. Transversely (7). 15. Two horses or two riders for these (7). 16. Suck or blow these (7). 26. Just on the target (5). 27. Take a bow when you get it (5). 28. Fairy-like (5). 29. A prejudice on the green (4). 30. It has a cap but its off here (4).

Solution on page 100



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tons of concentrates came from Branberg West Mine from which 34.1 tons of tin were recovered (34.5 tons) and 13 tons of tungsten oxide compared with 14.7 tons.

Company Shorts

The South West Africa Co.—Fixed assets as at June 30, 1955, were £640,747 as against £627,824. Current assets including cash of £29,385 (£12,856) declined to £406,857 from £449,951. Net profits, after taxation, earned during the year were £56,959 (£72,470).

Waterval (Rustenburg) Platinum Mining Co.—Dividends received during the 14 months ended August 31, 1955, advanced to £885,303 from £503,178 during the previous 12 months. Net profits after taxation totalled £277,873 (£474,834). Fixed assets shown in the full accounts including unquoted shares at £1,403,498 (same), at £1,663,615 remained unchanged. Current assets including debtors and dividends, receivable of £376,496 (£19) moved up sharply to £401,558 from £1,393. Current liabilities of £395,672 compared with £1,505, previously. Meeting Johannesburg February 13, at which time a special resolution will be considered for increasing the company's nominal capital.

Potgietersrust Platinum.—The full report and accounts as at August 31, 1955, showed value at cost of 350,000 Rustenburg

Platinum Mines £ shares held to be unchanged at £1,312,500. Total fixed assets amounted to £1,322,332 (same). Current assets including dividend from Rustenburg of £385,000 (£315,000) were £447,819 (£350,315). Current liabilities and provisions totalled £409,976 (£325,677). Net profits after taxation moved up to £601,955 from £490,903. The meeting will be held in Johannesburg on February 13, at which time a proposal for increasing the company's nominal capital will also be considered. Mr. D. A. B. Watson is chairman.

Union Platinum Mining Company.—Dividends received during 14 months ended August 31, 1955, moved up to £373,298 from £213,749 a year ago. Net profits after taxation increased to £368,546 from £200,160. Fixed assets at August 31, 1955 (including unquoted shares at cost of £988,057 unchanged from previous year) at £1,025,344 compared with £1,015,285. Due mainly to debtors and dividends receivable jumping to £158,200 from £26 current assets increased to £174,657 from £3,433. Meeting, Johannesburg, February 13, at which an extraordinary resolution to increase the company's nominal capital will also be considered. Mr. E. S. Hallett is chairman.

Emperor Mines Ltd.—The company's balance sheet at June 30, 1955, disclosed investments at £A625,542 as against £A557,924. Current assets of £A10,134 (£A7,608) compared with current liabilities of £A2,539 (£A2,593). Net profit after tax remained largely unchanged at £97,820 against £101,064. Mr. Wallace H. Smith is chairman.

METALLIFEROUS MINING SCHOLARSHIPS.—Two Awards of £300 and three of £150 p.a., from October, 1956 (Provided by Metalliferous Mining Companies) for 3-year Metalliferous Mining course at Royal School of Mines, for Degree and A.R.S.M. Application forms from Registrar, Imperial College, London, S.W.7, to be returned by March 31, 1956.

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- (b) supervise field operations by operators under the Mining Law and Regulations;
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CORRECT SOLUTION TO "UNICONE" CROSS-WORD No. 14 APPEARING ON PAGE 99

ACROSS: 1. Comparisons; 9. Odious; 10. Bemuse; 12. Asphalt; 17. Byron; 18. Abode; 19. Erewhon; 20. Loser; 21. Duncie; 22. Outpace; 23. Menai; 24. Myths; 25. Donates; 31. Cubist; 32. Funnel; 33. A sure winner.

DOWN: 2. Oboe; 3. Posts; 4. Reach; 5. Sibyl; 6. Numb; 7. Football match; 8. Reprehensible; 11. Present; 12. Aneroid; 13. Preston; 14. Athwart; 15. Tandems; 16. Cornets; 26. Outer; 27. Arrow; 28. Elfyn; 29. Bias; 30. Knee.

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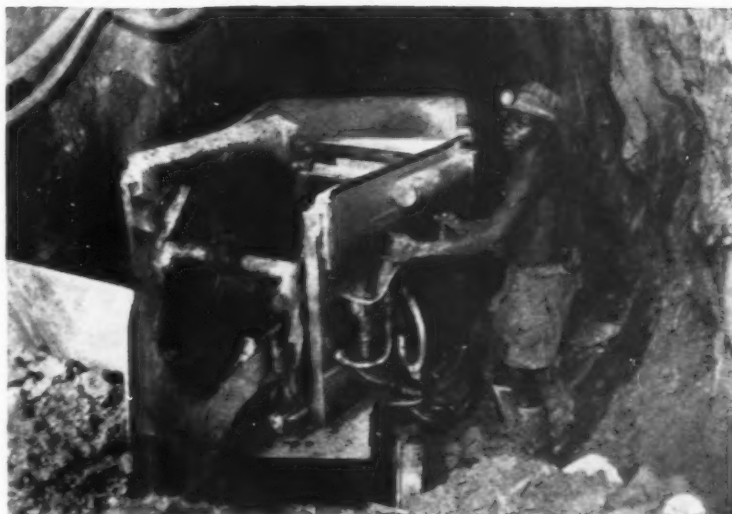
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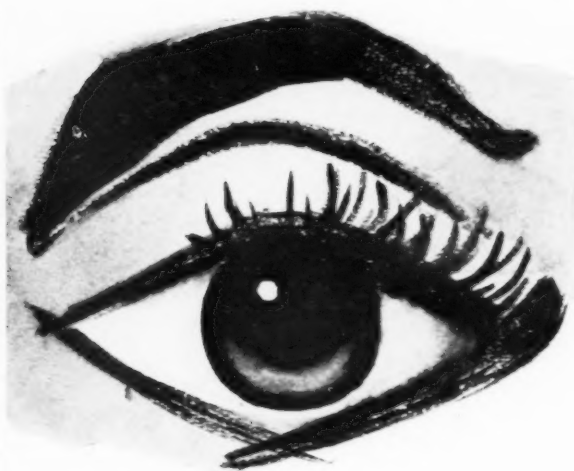
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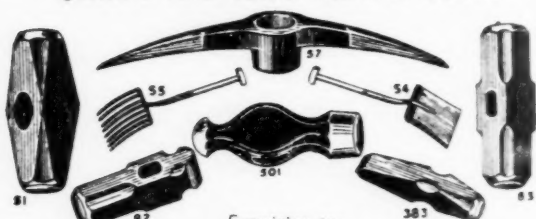
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